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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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400 GARDEN CITY PLAZA
SUITE 300
GARDEN CITY, NY 11530

EXAMINER

YU, LIHONG

ART UNIT PAPER NUMBER

4181

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10/26/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/521,747

Applicant(s)RICHARDSON, MICHAEL
RICHARD**Examiner**

Lihong Yu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claim 1 and 2 are rejected under 35 U.S.C. 102(a) as being anticipated by Anderson et al (US 2003/0017832 A1).

Consider claim 1, Anderson discloses a method of enhancing signals in a mobile telecommunications system (see para. 0001 and para. 0016, where Anderson discusses a **method for enhanced radio communication**). Anderson discloses the system comprising a base station and first and second receivers within a reception zone of the base station (see para. 0359, section 1, where Anderson discusses a transmitter, therefore a base station, and first antenna and second antenna to receive a signal from the transmitter, therefore first and second receiver). Anderson discloses receiving a plurality of first signals at the first receiver, the first receiver having a good quality communications link with the base station (see para. 0359, section 1, para. 0337 and para. 0246, where Anderson discusses receiving first signals at the first antenna, therefore first receiver, the signal received at the primary antenna, i.e. the first antenna, is the reference signal that has the highest signal-to-noise ratio, therefore

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good quality link). Anderson discloses receiving a plurality of second signals at the second receiver (see para. 0337, where Anderson discusses pairs of signal are transmitted to antennas, therefore second antenna). Anderson discloses correlating the received signals from both receivers to provide an estimated correlation (see para. 0337, where Anderson discusses performing a correlation on pairs of received signals, therefore signals from both receivers). Anderson discloses selecting areas from within the estimated correlation (see para. 0359, section 21, where Anderson discusses determining a most likely range of estimates from correlation values, therefore selecting an area). Anderson discloses creating a replica of unwanted signals using said selection and said plurality of first signals (see para. 0247, where Anderson discusses estimating the components of multipath signal, therefore creating a replica of unwanted signals, using the received signal, therefore the second signal, and the direct path signal, therefore the first signal). Anderson discloses enhancing said plurality of second signals by eliminating said replica therefrom (see para. 0247, where Anderson discusses subtracting the components of multipath signal, therefore the replica of unwanted signal, from the received signal, therefore the second signal).

Consider claim 2. Anderson discloses a method according to claim 1, Anderson discloses the estimated correlation comprises a correlation of propagation delay and frequency shift for the received signals (see para 0344 and para. 0359, section 21, 22, and 23, where Anderson discusses each correlation is associated with an estimated correlation of Time Difference Of Arrival, therefore propagation delay, and an estimated correlation of Frequency Difference Of Arrival, therefore frequency shift).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al (US 2003/0017832 A1).

Consider claim 3, Anderson discloses a method according to claim 2, however, Anderson does not specifically disclose the last step includes correlating said enhanced plurality of second signals with said plurality of first signals to produce an enhanced correlation. It would have been obvious to one having ordinary skill in the art at the time the invention was made to correlate the enhanced second signals with the first signals to have an enhanced correlation since it was known in the art to verify a signal process.

Consider claim 4, Anderson discloses a method of generating a correlation of Time Difference Of Arrival, therefore propagation delay, and Frequency Difference Of Arrival, therefore frequency shift, for the received second signals and the first signals, to produce the enhanced second signals (see para. 0359, section 21 and para. 0247). Anderson does not specifically disclose generating a correlation of propagation delay and frequency shift for the enhanced second signals and the first signals. It would have been obvious to one having ordinary skill in the art at the time the invention was made to generate a correlation of

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propagation delay and frequency shift for the enhanced second signals and the first signals since it was known in the art to verify a signal process.

Consider claim 5, Anderson discloses a method according to claim 1, however, Anderson does not specifically disclose the last step includes correlating said enhanced plurality of second signals with said plurality of first signals to produce an enhanced correlation. It would have been obvious to one having ordinary skill in the art at the time the invention was made to correlate the enhanced second signals with the first signals to have an enhanced correlation since it was known in the art to verify a signal process.

Consider claim 6, Anderson discloses a method of generating a correlation of Time Difference Of Arrival, therefore propagation delay, and Frequency Difference Of Arrival, therefore frequency shift, for the received second signals and the first signals, to produce the enhanced second signals (see **para. 0359, section 21 and para. 0247**). Anderson does not specifically disclose generating a correlation of propagation delay and frequency shift for the enhanced second signals and the first signals. It would have been obvious to one having ordinary skill in the art at the time the invention was made to generate a correlation of propagation delay and frequency shift for the enhanced second signals and the first signals since it was known in the art to verify a signal process.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Maloney (US 6288675 B1) discloses a method for accurately estimating data using correlation of two signals.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lihong Yu whose telephone number is (571) 270-1947. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro can be reached on (571) 272-2600. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Lihong Yu



NICK CORSARO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600